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10/758,014	01/16/2004	Makoto Suzuki	117499	6249

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EXAMINER
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NGUYEN, TU MINH

ART UNIT	PAPER NUMBER
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3748

DATE MAILED: 10/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/758,014

Applicant(s)

SUZUKI ET AL.

Examiner

Tu M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-20 is/are pending in the application.
- 4a) Of the above claim(s) 3-5 and 7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,8,12-15,19 and 20 is/are rejected.
- 7) ☒ Claim(s) 9-11 and 16-18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. An Applicant's amendment filed on October 3, 2006 has been entered. Claim 6 has been canceled; and claims 1, 4, and 14 have been amended. Overall, claims 1-5 and 7-20 are pending in this application.

2. Based on a previous Applicant's election without traverse of the species of Figure 6, claims 1, 2, and 8-20 are readable thereon and will be examined in their full merit. Claims 3-5 and 7 are withdrawn from further consideration by the examiner as being drawn to a non-elected invention.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 8 is rejected under 35 U.S.C. 112, first paragraph, because the specification as shown in the elected Figure 6 species, while being enabling for "having a first air-fuel ratio detection unit provided between the primary engine and the junction portion", does not reasonably provide enablement for "having a first air-fuel ratio detection unit and a fifth air-fuel ratio detection unit provided between the primary engine and the junction portion". The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make use the invention commensurate in scope with these claims.

*Claim Rejections - 35 USC § 102*

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 2, 8, 14, and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Fuwa et al. (U.S. Patent 6,345,496).

Re claims 1 and 14, as shown in Figure 42, Fuwa et al. disclose an exhaust emission control system for a vehicle including a primary engine (1) and a secondary engine (120a) having a displacement smaller than that of the primary engine (primary engine (1) is a multi-cylinder engine while secondary engine (120a) is a single cylinder engine), the exhaust emission control system comprising:

- an exhaust passage (129) having a junction portion at which exhaust gas discharged from the primary engine (1) and exhaust gas discharged from the secondary engine (120a) join together;

- an exhaust emission purifying device (8, 10) that purifies the exhaust gas joined at the junction portion in the exhaust passage, the exhaust emission purifying device (8, 10) being warmed under heat of exhaust gas discharged from the primary engine;

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- a first air-fuel ratio detection unit (29c) provided between the primary engine and the junction portion for detecting an air-fuel ratio of exhaust gas;
- a second air-fuel ratio detection unit (29b) provided downstream of the exhaust emission purifying device (8) for detecting an air-fuel ratio of the exhaust gas; and
- a controller (20) that controls an air-fuel ratio of air/fuel mixture each admitted into the primary engine and the secondary engine based on the air-fuel ratio detected by the first air-fuel ratio detection unit and the air-fuel ratio detected by the second air-fuel ratio detection unit, respectively (see lines 31-48 of column 8 and lines 60-67 of column 32).

Re claims 2 and 15, in the system of Fuwa et al., the secondary engine (120a) is operated to drive an accessory (132) of the vehicle (see lines 1-6 of column 32).

Re claim 8, as best understood, the system of Fuwa et al. further comprises:

- a fifth air-fuel ratio detection unit (29c) provided between the primary engine and the junction portion for detecting an air-fuel ratio of exhaust gas;
- a sixth air-fuel ratio detection unit (29a) provided between the junction portion and the exhaust emission purifying device for detecting an air-fuel ratio of exhaust gas; and
- a controller (40) that controls an air-fuel ratio of air/fuel mixture admitted into the primary engine based on the air-fuel ratio detected by the fifth air-fuel ratio detection unit, and controls an air-fuel ratio of air/fuel mixture admitted into the secondary engine based on the air-fuel ratio detected by the sixth air-fuel ratio detection unit (see lines 60-67 of column 32).

*Claim Rejections - 35 USC § 103*

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 12-13 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuwa et al. as applied to claims 1 and 14, respectively, above.

Re claims 12 and 19, it is obvious that the system of Fuwa et al. further comprises valve position detection units that detect positions of the intake and exhaust valve positions of the primary engine, and the positions of the intake and exhaust valve positions of the secondary engine.

Fuwa et al., however, fail to specifically disclose that the system further comprises the operations for stopping a drive of each of the primary engine and secondary engine are inhibited when it is determined that the intake valves and the exhaust valves of the primary engine and secondary engine are opened based on output values detected by the valve position detection units.

It is well known to those with ordinary skill in the art that a typical engine is equipped with means to inhibit the stopping of the engine when it is determined that the intake valves and the exhaust valves of engine are opened based on output values detected by the valve position detection units. This is done to prevent severe damage to the valves when a piston is reciprocating uncontrollably and hits the valves when an engine is stopped suddenly.

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Re claims 13 and 20, it is also obvious that the system of Fuwa et al. further comprises airflow meters to detect flow rates of intake air admitted into the primary engine and the secondary engine.

Fuwa et al., however, fail to specifically disclose that a quantity of fuel injected into the primary engine or the secondary engine is controlled in accordance with a flow rate of intake air into the engine.

It is well known to those with ordinary skill in the art that in an engine such as the one in Fuwa et al., an air-fuel ratio of a mixture into the engine is closely controlled based on at least an operation state of the engine. Therefore, to keep a desired air-fuel ratio, a quantity of fuel injected into the primary engine or the secondary engine in Fuwa et al. is controlled in accordance with a flow rate of intake air into the engine.

#### ***Allowable Subject Matter***

9. Claims 9-11 and 16-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Response to Arguments***

10. Applicant's arguments with respect to the references applied in the previous Office Action have been fully considered but they are not persuasive.

In response to applicant's argument that Fuwa et al. fail to disclose or suggest the controlling of the air-fuel ratio of the secondary engine based on a second air-fuel ratio

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detection unit (29b) provided downstream of the exhaust emission purifying device (8) (page 8 of the Applicant's Amendment), the examiner respectfully disagrees.

The text on lines 31-48 of column 8 in Fuwa et al. reads as follows:

*"Contrarily, the downstream side air-fuel ratio sensor 29b is for compensating for the deviation of the engine air-fuel ratio from the target value (A/F)T due to the deterioration of the upstream side sensor 29a. For the upstream side and the downstream side sensors 29a and 29b, an air-fuel ratio sensor generating an output voltage which corresponds to the exhaust gas air-fuel ratio over a broader range of the exhaust gas air-fuel ratio may be used, while a Z-output type oxygen concentration sensor, of which an output voltage varies drastically when the detecting exhaust gas air-fuel ratio increases or decreases across the stoichiometric air-fuel ratio, may also be used. Note that the downstream side sensor 29b may be arranged in the exhaust passage between the exhaust gas purifying catalyst 10 and the secondary air supplying device 14, alternatively. Further, the deterioration of the catalyst(s) located between the two sensors 29a and 29b may be detected on the basis of the output signals from the sensors 29a and 29b."* (emphasis added by examiner)

Based from the above text, the second air-fuel ratio sensor (29b) in Fuwa et al. is utilized to compensate for a deviation of the engine air-fuel ratio from a target value due to the deterioration of an upstream air-fuel ratio sensor (29a). This means that if the upstream sensor (29a) is no longer reliable because it is deteriorated, the air-fuel ratio in an exhaust gas stream cannot be controlled precisely to effectively operate the exhaust emission purifying device (8). When this situation occurs, the second air-fuel ratio (29b) is utilized instead to control an engine air-fuel ratio to a target value so that the operation of the device (8) is not impaired.



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Furthermore, the second air-fuel ratio sensor (29b) in Fuwa et al. is further utilized to detect the deterioration of the device (8). One with ordinary skill in the art immediately recognizes that when the device (8) is deteriorated, an engine air-fuel ratio must be adjusted to optimize an purification efficiency of the device (8). Thus, based on these reasons, Fuwa et al. clearly disclose or suggest the claim limitation in dispute.

### ***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### ***Prior Art***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of one patent: Akazaki et al. (U.S. Patent 5,937,638) shift an engine air-

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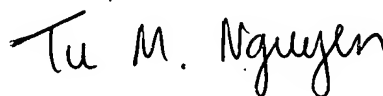
fuel ratio to a leaner value to maintain a purification efficiency of a deteriorated catalyst at an optimum value.

*Communication*

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TMN

Tu M. Nguyen

October 28, 2006

Primary Examiner

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